

10-27-00

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**UTILITY PATENT APPLICATION TRANSMITTAL**  
**(Large Entity)***(Only for new nonprovisional applications under 37 CFR 1.53(b))*

Docket No.

D2446

Total Pages in this Submission

**TO THE ASSISTANT COMMISSIONER FOR PATENTS**

Box Patent Application

Washington, D.C. 20231

Transmitted herewith for filing under 35 U.S.C. 111(a) and 37 C.F.R. 1.53(b) is a new utility patent application for an invention entitled:

**PHOTODIODE/LASER MOUNTING BRACKET**

and invented by:

**Brett Rosen**  
**Robert Joseph Chilton III**  
**Warren Panama Johnson**If a **CONTINUATION APPLICATION**, check appropriate box and supply the requisite information:☐ **Continuation** ☐ **Divisional** ☐ **Continuation-in-part (CIP)** of prior application No.: \_\_\_\_\_

Which is a:

☐ **Continuation** ☐ **Divisional** ☐ **Continuation-in-part (CIP)** of prior application No.: \_\_\_\_\_

Which is a:

☐ **Continuation** ☐ **Divisional** ☐ **Continuation-in-part (CIP)** of prior application No.: \_\_\_\_\_

Enclosed are:

**Application Elements**

1. ☒ Filing fee as calculated and transmitted as described below
2. ☒ Specification having 10 pages and including the following:
  - a. ☒ Descriptive Title of the Invention
  - b. ☐ Cross References to Related Applications *(if applicable)*
  - c. ☐ Statement Regarding Federally-sponsored Research/Development *(if applicable)*
  - d. ☐ Reference to Microfiche Appendix *(if applicable)*
  - e. ☒ Background of the Invention
  - f. ☒ Brief Summary of the Invention
  - g. ☒ Brief Description of the Drawings *(if drawings filed)*
  - h. ☒ Detailed Description
  - i. ☒ Claim(s) as Classified Below
  - j. ☒ Abstract of the Disclosure

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**Application Elements (Continued)**

3. ☒ Drawing(s) *(when necessary as prescribed by 35 USC 113)*
- a. ☐ Formal Number of Sheets \_\_\_\_\_
- b. ☒ Informal Number of Sheets 3
4. ☒ Oath or Declaration
- a. ☒ Newly executed *(original or copy)* ☐ Unexecuted
- b. ☐ Copy from a prior application (37 CFR 1.63(d)) *(for continuation/divisional application only)*
- c. ☒ With Power of Attorney ☐ Without Power of Attorney
- d. ☐ DELETION OF INVENTOR(S)  
Signed statement attached deleting inventor(s) named in the prior application,  
see 37 C.F.R. 1.63(d)(2) and 1.33(b).
5. ☐ Incorporation By Reference *(usable if Box 4b is checked)*  
The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied  
under Box 4b, is considered as being part of the disclosure of the accompanying application and is hereby  
incorporated by reference therein.
6. ☐ Computer Program in Microfiche *(Appendix)*
7. ☐ Nucleotide and/or Amino Acid Sequence Submission *(if applicable, all must be included)*
- a. ☐ Paper Copy
- b. ☐ Computer Readable Copy *(identical to computer copy)*
- c. ☐ Statement Verifying Identical Paper and Computer Readable Copy

**Accompanying Application Parts**

8. ☒ Assignment Papers *(cover sheet & document(s))*
9. ☐ 37 CFR 3.73(B) Statement *(when there is an assignee)*
10. ☐ English Translation Document *(if applicable)*
11. ☐ Information Disclosure Statement/PTO-1449 ☐ Copies of IDS Citations
12. ☐ Preliminary Amendment
13. ☒ Acknowledgment postcard
14. ☒ Certificate of Mailing
- ☐ First Class ☒ Express Mail *(Specify Label No.):* EJ163312532US

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**Accompanying Application Parts (Continued)**

15. ☐ Certified Copy of Priority Document(s) *(if foreign priority is claimed)*
16. ☐ Additional Enclosures *(please identify below):*

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**Request That Application Not Be Published Pursuant To 35 U.S.C. 122(b)(2)**

17. ☐ Pursuant to 35 U.S.C. 122(b)(2), Applicant hereby requests that this patent application not be published pursuant to 35 U.S.C. 122(b)(1). Applicant hereby certifies that the invention disclosed in this application has not and will not be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication of applications 18 months after filing of the application.

***Warning***

***An applicant who makes a request not to publish, but who subsequently files in a foreign country or under a multilateral international agreement specified in 35 U.S.C. 122(b)(2)(B)(i), must notify the Director of such filing not later than 45 days after the date of the filing of such foreign or international application. A failure of the applicant to provide such notice within the prescribed period shall result in the application being regarded as abandoned, unless it is shown to the satisfaction of the Director that the delay in submitting the notice was unintentional.***

**UTILITY PATENT APPLICATION TRANSMITTAL**  
**(Large Entity)**

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Docket No.  
D2446

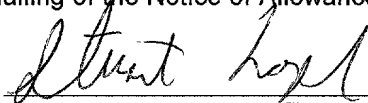
Total Pages in this Submission

**Fee Calculation and Transmittal**

**CLAIMS AS FILED**

For	#Filed	#Allowed	#Extra	Rate	Fee
Total Claims	10	- 20 =	0	x \$18.00	\$0.00
Indep. Claims	2	- 3 =	0	x \$80.00	\$0.00
Multiple Dependent Claims (check if applicable) <input type="checkbox"/>					\$0.00
BASIC FEE					\$710.00
OTHER FEE (specify purpose)					\$0.00
TOTAL FILING FEE					\$710.00

- ☐ A check in the amount of \_\_\_\_\_ to cover the filing fee is enclosed.
- ☒ The Commissioner is hereby authorized to charge and credit Deposit Account No. 50-1047 as described below. A duplicate copy of this sheet is enclosed.
- ☒ Charge the amount of \$710.00 as filing fee.
- ☒ Credit any overpayment.
- ☒ Charge any additional filing fees required under 37 C.F.R. 1.16 and 1.17.
- ☐ Charge the issue fee set in 37 C.F.R. 1.18 at the mailing of the Notice of Allowance, pursuant to 37 C.F.R. 1.311(b).

  
Signature

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Tel.: 973-548-1099

Dated: 10/26/00

CC:

**CERTIFICATE OF MAILING BY "EXPRESS MAIL" (37 CFR 1.10)**Applicant(s): **Brett Rosen, et al.**

Docket No.

**D2446**

Serial No.

Unassigned

Filing Date

Filed Herewith

Examiner

Unassigned

Group Art Unit

Unassigned

Invention: **PHOTODIODE/LASER MOUNTING BRACKET**

JC825 U.S. PTO

09/697619



10/26/00

I hereby certify that this **New U.S. Patent Application***(Identify type of correspondence)*

is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 in an envelope addressed to: The Assistant Commissioner for Patents, Washington, D.C. 20231

on 10/26/00  
*(Date)*

MARTORIE SCARIATI*(Typed or Printed Name of Person Mailing Correspondence)*Martorie Scariati*(Signature of Person Mailing Correspondence)*EJ163312532US*("Express Mail" Mailing Label Number)***Note: Each paper must have its own certificate of mailing.**

**APPLICATION**

**FOR**

**United States**

**LETTERS**

**PATENT**

**PHOTODIODE/LASER MOUNTING BRACKET**

**Inventor: Brett Rosen**

**Robert Joseph Chilton III**

**Assignee: General Instrument Corporation**

**General Instrument Reference No.: D2446**

5            PHOTODIODE/LASER MOUNTING BRACKET

10           FIELD OF THE INVENTION

          The present invention relates generally to an apparatus and method for the assembly of electrical components and circuitry in the manufacture of electronic products.

15           BACKGROUND OF THE INVENTION

          In the manufacture of electronic equipment and appliances it is common to connect component devices such as photodiodes and lasers, for example, to circuit boards commonly termed "plug in" boards. An example of such a plug in board is a Trans-Impedance –Amplifier (TIA) used in CATV-RF Broadband applications.

20        Plug in boards permit ease of assembly or replacement and a means by which component devices in an electronic product are integrated into the circuitry of the product.

          Typically, the component device to be connected to the plug in board is mounted on a bracket that is in turn mounted or anchored remotely from the plug  
25        in board on a surface such as the motherboard of the product, for example. An example of such a bracket is the "Universal" mounting bracket manufactured by the AMP Corporation. The bracket is fabricated such that when a component device is mounted in it, the component device can be easily positioned relative to, and connected to the plug in board.

30

5           In certain applications, however, the use of a “universal” type mounting bracket has some drawbacks in its application, particularly with respect to the mounting location of the mounting bracket. For example, in CATV-RF Broadband applications, products include photodiodes and lasers. These component devices are mounted on a bracket such as the “universal” bracket described above which is  
10   in turn mounted on the mother board of the product, and electrical leads from the photodiode or laser are connected to a remotely located plug in board, thereby integrating the component devices into the circuitry of the subject product. During product transportation, or normal use, however, the plug in board is capable of movement independent of the mounting bracket to which the component device is  
15   attached. This relative or differential movement between the surface to which the mounting bracket is anchored and thus the bracket itself, and the plug in board to which the mounted component device is connected, leads to undesirable relative movement and stress on the connections between the component device and the plug in board to which it is connected. The differential movement has been known  
20   to cause degradation in the performance of the photodiode or laser connected to the plug in board and, in some instances, a complete separation of the contact leads of the mounted component device from the plug in board. It is desirable, therefore, to have an electrical component device mounting system that will eliminate such differential movement and be unaffected by movement in a plug in board during  
25   product shipment or use, while maintaining all component device performance and layout criteria.



5 SUMMARY OF THE INVENTION

The present invention solves these and other problems by providing a method and apparatus for mounting an electronic component device directly to a plug in board thereby eliminating differential movement between the mounting surface of the bracket holding the component device, and the plug in board to which the component device is connected, during either transportation or normal use. By eliminating the differential/relative movement between the anchoring surface of the mounting bracket and the plug in board, the stresses generated by movement of the connection leads from the component device relative to the plug in board and the potential consequences thereof, are eliminated.

15

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 shows a photodiode mounted on a conventional mounting bracket that is anchored remotely from a plug in board;

FIG. 2 shows a mounting bracket fabricated according to a preferred embodiment of the present invention; and

20

FIG. 3 shows a photodiode device mounted in accordance with a preferred embodiment of the present invention.

DETAILED DESCRIPTION

25 The present invention includes *inter alia* an apparatus and method for mounting electrical component devices directly onto a plug in board of an electrical product. As discussed above, conventional methods for mounting

5 electronic component devices are prone to differential movement of the components during transportation or use.

At this point it is worthy to note that any reference herein to “one embodiment” or an “embodiment” means that a particular feature, structure, or characteristic described in connection with the embodiment is included in at least  
10 one embodiment of the invention. The appearances of the phrase “in a preferred embodiment” in various places herein do not necessarily refer to the same embodiment.

FIG. 1 shows a typical use of a conventional mounting bracket. As shown in FIG. 1, a mounting bracket 100 is mounted on a motherboard 101. Removably  
15 mounted on the bracket 100 is a photodiode device 102, comprising leads 103, which are connected to a plug in circuit board 104. As can be seen from FIG. 1, should there be any movement of the plug in board 104, relative to the motherboard 101, undue stress could be placed on the leads 103 by virtue of the displacement of board 104, relative to the motherboard 101, possibly leading to  
20 deterioration of electrical contact of the leads 103 with the plug in board 104 and possible total loss of contact with the plug in board 104.

FIG. 2 shows a mounting bracket fabricated according to a preferred embodiment of the present invention. As shown in FIG.2, a mounting bracket 200 comprises a first end 201, a second end 202 disposed at a right angle to the first  
25 end 201. The first end 201, and second end 202, of the bracket 200, are connected to each other by a shaft 203, forming a right angle and having a first mounting point 204 and a second mounting point 205 disposed along its length. The first

5 mounting point 204, and second mounting point 205 serve as means, through which the bracket 200 is removably attached to a mounting surface (not shown). The first end 201 of the mounting bracket 200 is substantially semi-circular in shape with an inner surface 206 to permit an electrical component device to be removably mounted within the confines formed by the inner surface 206. In a  
10 preferred embodiment of the present invention, the mounting bracket 200 is preferably fabricated by an Aluminum 6005-T5 extrusion with a caustic etch and clear chromate finish.

FIG. 3 shows the mounting bracket shown in FIG. 2 utilized according to a preferred embodiment of the present invention. As shown in FIG. 3, a  
15 motherboard 300, is disposed adjacent to a plug in circuit board 301. A mounting bracket 302 according to a preferred embodiment of the present invention comprises a shaft 303 with a first end 304, and a second end 305 and is removably attached to the plug in board 301 by attachment means (not shown) through a hole disposed in the vicinity of the second end 305 of the shaft 303. The first end 304  
20 contains a photodiode device 306, which further comprises leads 307, removably mounted within the first end 304. The leads 307 are connected to the plug in board 301, thereby incorporating the photodiode device 306 into the circuitry of the product of which the motherboard 300 and plug in board 301 are a part. In a preferred embodiment of the present invention, the orientation of the mounting  
25 bracket 302 is selected to ensure that the mounted component device such as a photodiode or laser conforms to the requirements of the fiber bend radius rule for fiber-optic devices. Moreover, in a preferred embodiment the clearance of the

5 bracket 302 from the plug in board is taken into account during fabrication so as to provide adequate clearance of the photodiode device from the surface of the plug in board 301.

By mounting the entire bracket structure 302 and the photodiode device 306 directly on the plug in board 301, grounding of the photodiode device is  
10 ensured. Moreover, any movement of the plug in board 301 will be accompanied by an equal and corresponding movement in the bracket structure 302. Accordingly, there is no relative movement between the bracket structure 302, and the plug in board 301 and the stresses generated on the leads of component devices mounted conventionally, i.e. remotely from, and connected to, a plug in board are  
15 thereby eliminated.

Although the present invention has been described in considerable detail with reference to certain preferred versions thereof, other versions are possible. For example, the mounting bracket may be fabricated without a right-angled shaft, or more than one mounting point. Therefore, the spirit and scope of the invention  
20 of the appended claims should not be limited to the description of the preferred versions contained herein.

The reader's attention is directed to all papers and documents which are filed concurrently with this specification and which are open to public inspection in conjunction with this specification, and the contents of all such papers and  
25 documents are incorporated herein by reference.

All the features disclosed in this specification (including any accompanying claims, abstract and drawings), and/or all of the steps or any method or process so

5 disclosed, may be combined in any combination, except combinations where at least some of the features and/or steps are mutually exclusive.

Each feature disclosed in this specification (including any accompanying claims, abstract, and drawings), may be replaced by alternative features serving the same equivalent or similar purpose, unless expressly stated otherwise. Thus,  
10 unless expressly stated otherwise, each feature disclosed is one example only of a generic series of equivalent or similar features.

WHAT IS CLAIMED IS:

- 1 1. A bracket for mounting an electrical component device comprising:
  - 2 a first end, said first end having a substantially semi-circular shape and an inner
  - 3 and outer surface, whereby said inner surface and said substantially semi-circular
  - 4 shape permit an electrical component device to be removably retained thereon;
  - 5 a second end; and
  - 6 a shaft connecting said first and second ends, said shaft having at least one
  - 7 mounting point disposed along its length for attaching said bracket and said
  - 8 electrical component device to a common mounting surface.
- 1 2. The bracket of claim 1 wherein said an electrical component device is
  - 2 photodiode.
- 1 3. The bracket of claim 1 wherein said an electrical component device is a laser.
- 1 4. The bracket of claim 1 wherein said shaft and said first and second ends are
  - 2 comprised of aluminum.
- 1 5. The bracket of claim 1 wherein said shaft forms a right angle whereby said
  - 2 second end and said at least one mounting point are disposed 90 degrees
  - 3 relative to said first end.

1 6. The bracket of claim 1 wherein said a common mounting surface comprises a  
2 plug in circuit board.

1 7. The bracket of claim 1 wherein said a common mounting surface comprises a  
2 Trans-Impedance-Amplifier.

1 8. A method for mounting an electrical component device comprising the steps of  
2 mounting an electrical component device on a mounting bracket;  
3 attaching said mounting bracket to a mounting surface; and  
4 connecting said electrical component device to said mounting surface.

1 9. The method of claim 8 wherein said mounting surface is a plug in circuit board.

1 10. The method of claim 8 wherein said mounting surface is a Trans-Impedance-  
2 Amplifier.

ABSTRACT

An apparatus and method for mounting an electronic component device directly to a plug in board within an electronic product thereby eliminating differential movement between the mounting surface of a mounting bracket holding an electrical component device, and the plug in board to which the component device is attached during transportation or use. By eliminating differential/relative movement between the anchoring surface of the mounting bracket and the plug in board commonly found in conventional applications, the stresses generated by differential movement of the connection leads of the mounted component device, relative to the plug in board, and the concomitant potential for degradation of component device performance resulting therefrom, are eliminated.



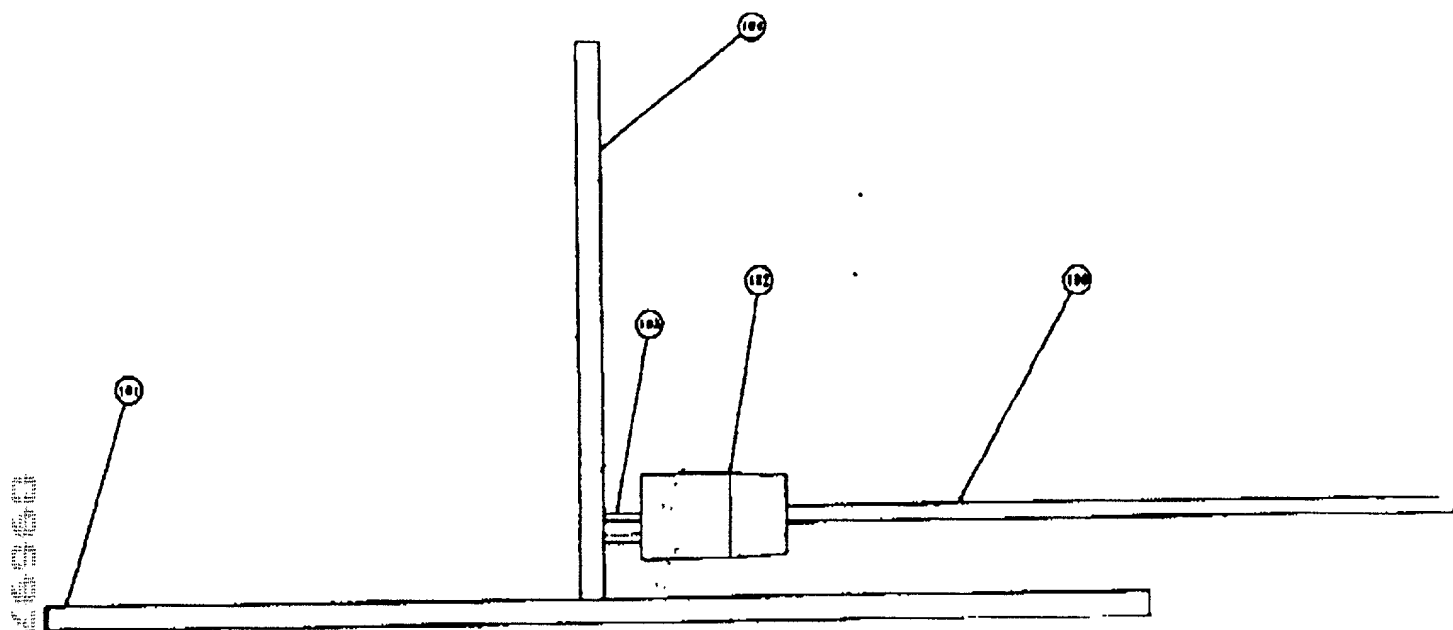


FIGURE 1

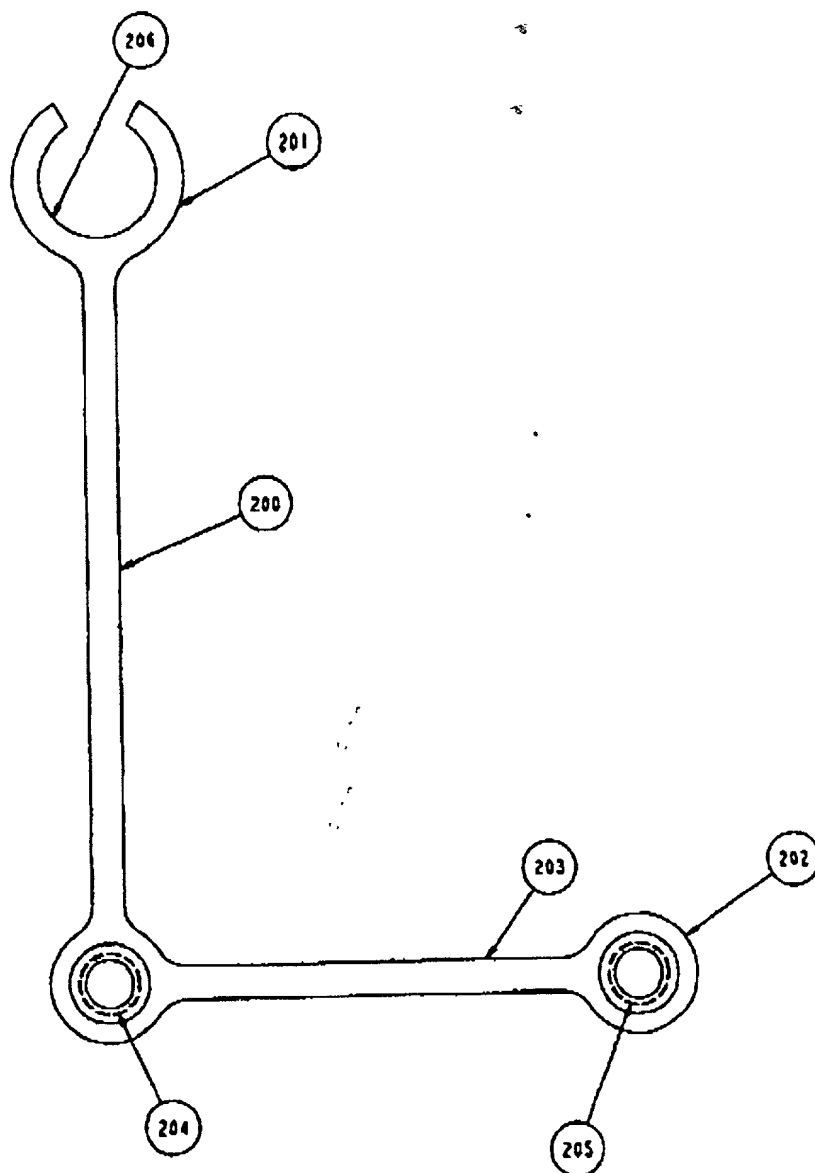


FIGURE 2



IN THE UNITED STATES  
PATENT AND TRADEMARK OFFICE

Declaration and Power of Attorney For Patent Application

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and joint inventor of the subject matter which is claimed and for which a patent is sought on the invention entitled:

PHOTODIODE/LASER MOUNTING BRACKET

the specification of which

[ X ] is attached hereto.

[ ] was filed on \_\_\_\_\_ as

Application Serial No.: \_\_\_\_\_

and was amended on \_\_\_\_\_  
(if applicable)

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information known to me that is material to patentability as defined in Title 37, Code of Federal Regulations, 1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code, 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application of which priority is claimed:

NONE

I hereby claim the benefit under Title 35, United States Code, 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, 112, I acknowledge the duty to disclose all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, 1.56(a) which became available between the filing date of the prior application and the national or PCT international filing date of this application:

NONE

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that those statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and or agents(s) with full power of substitution and revocation, to prosecute said application, to make alterations and amendments therein, to receive the patent, and to transact all business in the Patent and Trademark Office connected therewith, and all business related to non-United States national, regional, and international patent applications corresponding therewith.

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